UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
PREVENTION, PESTICIDES
AND TOXIC SUBSTANCES

Note to Reader

Background: As part of its effort to involve the public in the implementation of the Food Quality Protection Act of 1996 (FQPA), which is designed to ensure that the United States continues to have the safest and most abundant food supply. EPA is undertaking an effort to open public dockets on the organophosphate pesticides. These dockets will make available to all interested parties documents that were developed as part of the U.S. Environmental Protection Agency's process for making reregistration eligibility decisions and tolerance reassessments consistent with FQPA. The dockets include preliminary health assessments and, where available, ecological risk assessments conducted by EPA, rebuttals or corrections to the risk assessments submitted by chemical registrants, and the Agency's response to the registrants' submissions.

The analyses contained in this docket are preliminary in nature and represent the information available to EPA at the time they were prepared. Additional information may have been submitted to EPA which has not yet been incorporated into these analyses, and registrants or others may be developing relevant information. It's common and appropriate that new information and analyses will be used to revise and refine the evaluations contained in these dockets to make them more comprehensive and realistic. The Agency cautions against premature conclusions based on these preliminary assessments and against any use of information contained in these documents out of their full context. Throughout this process, If unacceptable risks are identified, EPA will act to reduce or eliminate the risks.

There is a 60 day comment period in which the public and all interested parties are invited to submit comments on the information in this docket. Comments should directly relate to this organophosphate and to the information and issues available in the information docket. Once the comment period closes, EPA will review all comments and revise the risk assessments, as necessary.

These preliminary risk assessments represent an early stage in the process by which EPA is evaluating the regulatory requirements applicable to existing pesticides. Through this opportunity for notice and comment, the Agency hopes to advance the openness and scientific soundness underpinning its decisions. This process is designed to assure that America continues to enjoy the safest and most abundant food supply. Through implementation of EPA's tolerance reassessment program under the Food Quality Protection Act, the food supply will become even safer. Leading health experts recommend that all people eat a wide variety of foods, including at least five servings of fruits and vegetables a day.

Note: This sheet is provided to help the reader understand how refined and developed the pesticide file is as of the date prepared, what if any changes have occurred recently, and what new information, if any, is expected to be included in the analysis before decisions are made. **It is not meant to be a summary of all current information regarding the chemical.** Rather, the sheet provides some context to better understand the substantive material in the docket (RED chapters, registrant rebuttals, Agency responses to rebuttals, etc.) for this pesticide.

Further, in some cases, differences may be noted between the RED chapters and the Agency's comprehensive reports on the hazard identification information and safety factors for all organophosphates. In these cases, information in the comprehensive reports is the most current and will, barring the submission of more data that the Agency finds useful, be used in the risk assessments.

Jack E. Housenger, Acting Director
Special Review and Reregistration Division

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
PREVENTION, PESTICIDES AND
TOXIC SUBSTANCES

May 10, 1999

MEMORANDUM

SUBJECT: **Malathion: Anticipated Residues for Acute and Chronic Dietary Risk from Uses being Supported for Reregistration.**
DP Barcode No.: D255365
Chemical No.: 057701
Reregistration Case No.: 0248

FROM: **William O. Smith, Chemist**
Chemistry and Exposure Branch I
Health Effects Division [7509C]

THROUGH: **F. B. Suhre, Branch Senior Scientist**
Chemistry and Exposure Branch I
Health Effects Division [7509C]

TO: **Paula Deschamp**
Reregistration Branch II
Health Effects Division [7509C]

Table 1 contains anticipated residues for assessment of acute and chronic dietary risk from uses of malathion on food crops. These anticipated residues are provided in support of the Reregistration Eligibility Decision Document for malathion. The acute anticipated residues (pending tolerance column in Table 1) are based on reassessed tolerances. Chronic anticipated residues (AR column in Table 1) are highly refined and are derived from monitoring data, reassessed tolerances, average field trial data, processing studies, and percent crop treated information. The sources of data used in deriving anticipated residues are documented in Tables 1, 2, 3 and 4. See the following discussion sections for a description of the data and the major assumptions used in deriving anticipated residues. These anticipated residues are being provided at their present level of refinement at the

request of HED and SRRD management. These data were compiled early in 1998 and were used for review of section 18 quarantine exemptions for use of malathion to control Mediterranean Fruit Flies in Florida and California (D249865; W. Dykstra, M. Lamont; 1/12/99). Although the procedures for the acute assessment are not consistent with those currently in place for other organophosphates, the selection of endpoints and the high NOAEL for this chemical indicate that the dietary exposure is not at a level of concern even in a Tier 1 analysis.

DISCUSSION

<u>Residues of Concern</u>: Tolerances for residues in/on food/feed commodities are currently expressed in terms of malathion *per se* (*O,O*-dimethyl dithiophosphate of diethyl mercaptosuccinate) [40 CFR §180.111, §185.3850, §185.7000, and §186.3850]. The HED Metabolism Committee has determined that the parent compound malathion and the metabolite malaoxon are the compounds to be regulated in plant commodities.

The field trial and processing data used in deriving these anticipated residues include malathion and malaoxon. Monitoring data on malathion and malaoxon are reported separately by FDA and not all analytical methods used are capable of detecting both. PDP reports residues only for malathion. Therefore, the monitoring data summarized in Table 2 represent malathion only. Nevertheless, in our judgement, the potential level of malaoxon residues in the samples monitored is adequately covered. Between 1992 and 1996 the FDA monitored 37,492 food samples for the oxygen analog of malathion with only four positive samples. Three samples of bread imported from Russia had low levels of malaoxon and one sweet pea sample from the United States had a positive detection. Field trial and metabolism studies also indicate that malaoxon is usually a minor metabolite, if detected at all. Two approaches to estimating the non-detectable malaoxon residues in the monitoring data were considered. One was to assume that malaoxon was present in all malathion samples at a level of ½ the limit of detection (LOD). The other procedure was to assume that malaoxon was not detectable in all samples and use a more conservative estimate of malathion residues in those samples for which it was nondetectable, i.e., use ½ the limit of quantitation(LOQ), with the assumption that the overestimate of residues (the LOQ is generally over 3 times higher than the LOD) would cover any trace levels of malaoxon that could be present in some of the samples. The second approach was adopted in this assessment.

<u>Percent Crop Treated Data</u>: The estimated usage of malathion on food crops is listed in Table 1. These data were provided by BEAD (G. Ali; November, 1997) with sources being EPA data, USDA, and the National Center for Food and Agricultural Policy. The usage data primarily from 1987 through 1996. The estimated maximum percent crop treated was use in the current assessment.

<u>Calculation of Acute Anticipated Residues:</u> These values represent the reassessed tolerances recommended in the Residue Chemistry Chapter of the malathion RED

(D239453; April 14, 1999; W. Smith) and are based primarily on field trial data submitted in support of reregistration. Anticipated residues are included only for the crops for which reregistration is being supported. All meat, milk, poultry and egg tolerances are being recommended for revocation with the understanding that any dermal use of malathion will be canceled. Although malathion is used on several animal feeds it has been determined that transfer of residues is low and metabolism and excretion is high in livestock; therefore, no tolerances are needed. Table 3 lists concentration/reduction factors from available processing data on malathion. These factors were used in estimating chronic anticipated residues and they should be used for the acute analysis as well. Specifically, processing factors should be entered into the DEEM analysis for the juices of grape juice, citrus juice, apple juice, raisins, tomato puree, tomato catsup, milled rice, corn oil, cottonseed oil, and cottonseed meal. The concentration factor for mint oil should not be used because it has already been taken into account in the tolerance for this commodity. The applicable default concentration factor in DEEM should be revised based on these data.

<u>Calculation of Chronic Anticipated Residues:</u>

Table 1 indicates for each commodity all of the elements that went into calculation of the chronic anticipated residue. The adjustments for percent crop treated and processing factors have been incorporated into the value listed in the AR column. Thus, the input to the DEEM analysis should not include separate entries for these values. The default concentration factors in the DEEM software should be turned off for those commodities with available processing studies. This includes all of the juices as the cumulative results show that residues of malathion are not expected to concentrate in any juice. In the case of juice concentrates the default factors should be changed to reflect the ratio of the concentrate factor and the ready-to-drink juice factor. See Table 2 for a complete description of the monitoring data, Table 3 for processing factors and Table 4 for field trial data.

Anticipated residues were calculated from these data as either

(Tolerance)*(any applicable processing factor)*(% crop treated/100)
Or
(Average field trial data)*(any processing factor)*(% crop treated/100)
Or
(Average of monitoring data adjusted as described below)*(any processing factor).

The monitoring data average was calculated by assuming that the percent crop treated should reflect the proportion of the monitoring samples containing any residues at all. Therefore, the samples reported as nondetectable were adjusted so that a proportion of the samples equal to the percent of the crop not treated were zero and the rest were assigned a value of ½ the LOQ.

Monitoring data were used from The USDA Pesticide Data Program, The U.S. Food and

Drug Administration and from FOODCONTAM (designated FODC in this document), which is a compilation of monitoring data from state laboratories. Table 2 includes some monitoring data that were not used in deriving anticipated residues for informational purposes.

Table 1. Anticipated Residues for Chronic and Acute Dietary Exposure Assessment on Malathion.

COMMODITY	Tolerance		Chronic Anticipated Residues		% Crop Treated
	Present	Pending	AR	Sources & any processing factors	
BLACKBERRIES	8	6	0.00890	FDA	25
BOYSENBERRIES	8	6	0.00890	FDA	55
DEWBERRIES	8	6	0.00890	FDA	55
LOGANBERRIES	8	6	0.00890	FDA	55
RASPBERRIES	8	6	0.00890	FDA	55
BLUEBERRIES	8	8	0.00930	FDA	80
CRANBERRIES	8	0	0.00000	REVOKE TOLERANCE	-
CURRANTS	8	8	0.00930	USE BLUEBERRY DATA	80
GOOSEBERRIES	8	8	0.00930	USE BLUEBERRY DATA	80
GRAPES-FRESH	8	4	0.00010	PDP	1
GRAPES-RAISINS	12	4	0.00004	0.4 X DILUTION FACTOR	1
GRAPES-JUICE	8	4	0.00001	0.1 X DILUTION FACTOR	1
STRAWBERRIES	8	1	0.01330	FDA	28
GRAPEFRUIT-PULP	8	4	0.00010	FDA	1
GRAPEFRUIT-JUICE	8	4	0.00001	0.06 X DILUTION FACTOR	1
KUMQUATS	8	4	0.00120	USE LEMON DATA	2
LEMONS-PULP	8	4	0.00120	FDA	2
LEMONS-PEEL	8	4	0.00120	FDA	2
LEMONS-JUICE	8	4	0.00007	0.06 X DILUTION FACTOR	2
LIMES-PULP	8	4	0.00120	USE LEMON DATA	2
LIMES-PEEL	8	4	0.00120	USE LEMON DATA	2
LIMES-JUICE	8	4	0.00007	USE LEMON DATA	2
ORANGES-PULP	8	4	0.00020	PDP	1
ORANGES-PEEL	8	4	0.00020	PDP	1
ORANGES-JUICE	8	4	0.00001	0.06 X DILUTION FACTOR	1
TANGERINES	8	4	0.00020	USE ORANGE DATA	1
TANGERINE-JUICE	8	4	0.00001	0.06 X DILUTION FACTOR	1

COMMODITY	Tolerance		Chronic Anticipated Residues		% Crop Treated
	Present	Pending	AR	Sources & any processing factors	
ALMONDS	8	0	0.00000	REVOKE TOLERANCE	-
CHESTNUTS	1	1	0.26100	FIELD TRIAL AVERAGE	100
FILBERTS	1	0	0.00000	REVOKE TOLERANCE	-
MACADAMIA NUTS	1	0.2	0.00300	FIELD TRIAL AVERAGE	6
PECANS	8	0.2	0.00350	USE WALNUT DATA	7
WALNUTS	8	0.2	0.00450	FIELD TRIAL AVERAGE	9
APPLES-FRESH	8	8	0.00300	PDP	15
APPLES-DRIED	8	8	0.00300	PDP	15
APPLES-JUICE	8	8	0.00039	0.13 DILUTION FACTOR * PDP	15
PEARS-FRESH	8	3	0.00020	PDP	2
PEARS-DRIED	8	3	0.00020	PDP	2
QUINCES	8	8	0.00300	USE APPLE DATA	15
APRICOTS-FRESH	8	1	0.00050	FDA	1
APRICOTS-DRIED	8	1	0.00050	FDA	1
CHERRIES-FRESH	8	3	0.01200	FDA	45
CHERRIES-DRIED	8	3	0.01200	FDA	45
CHERRIES-JUICE	8	3	0.01200	FDA	45
NECTARINES	8	1	0.00080	FDA	5
PEACHES-FRESH	8	6	0.00100	PDP	5
PEACHES-DRIED	8	6	0.00100	PDP	5
PLUMS-FRESH	8	0	0.00000	REVOKE TOLERANCE	-
PLUMS-PRUNES	8	0	0.00000	REVOKE TOLERANCE	-
PRUNE-JUICE	8	0	0.00000	REVOKE TOLERANCE	-
AVOCADOS	8	0.2	0.01000	FDA & FODC	3
DATES	8	8	7.28000	TOLERANCE	91
FIGS	8	1	0.01220	FIELD TRIAL AVERAGE	6
GUAVA	8	1	0.15900	FIELD TRIAL AVERAGE	100
MANGOES	8	0.2	0.01000	FDA (DOMESTIC AND IMPORT)	1
PAPAYAS-PULP	1	1	0.00125	FIELD TRIAL AVERAGE	1

COMMODITY	Tolerance		Chronic Anticipated Residues		% Crop Treated
	Present	Pending	AR	Sources & any processing factors	
PAPAYAS-DRIED	1	1	0.00125	FIELD TRIAL AVERAGE	1
PAPAYAS-JUICE	1	1	0.00125	FIELD TRIAL AVERAGE	1
PINEAPPLE-PULP	8	0.2	0.01000	FDA (DOMESTIC+IMPORT)	100
PINEAPPLE-DRIED	8	0.2	0.01000	FDA (DOMESTIC+IMPORT)	100
PINEAPPLE-JUICE	8	0.2	0.01000	FDA (DOMESTIC+IMPORT)	100
PASSION FRUIT	8	0.2	0.05640	FIELD TRIAL AVERAGE	100
SUGAR APPLES	0.5	0.5	0.50000	TOLERANCE	100
HOPS	1	1	0.01000	TOLERANCE	1
HORSERADISH	8	0.5	0.06700	USE TURNIP ROOT DATA	100
CANTALOUPES-PULP	8	1	0.00570	FDA	11
CASABAS	8	1	0.01000	USE MELON DATA	8
CRENSHAWS	8	1	0.01000	USE MELON DATA	8
HONEYDEW MELONS	8	1	0.00080	FDA & FODC	8
PERSIAN MELONS	8	1	0.01000	USE MELON DATA	8
WATERMELON	8	1	0.00050	FDA	5
CUCUMBERS	8	0.2	0.00030	FDA	3
PUMPKIN	8	1	0.01270	USE MELON DATA	10
SQUASH-SUMMER	8	0.2	0.00090	FDA	9
SQUASH-WINTER	8	1	0.00090	PDP	9
EGGPLANT	8	2	0.00160	FDA	11
PEPPERS,SWEET	8	0.5	0.00040	FDA	4
CHILI PEPPERS	8	0.5	0.00570	FDA & FODC	5
PEPPERS-OTHER	8	0.5	0.00570	USE CHILI PEPPERS DATA	5
PIMIENTOS	8	0.5	0.00570	USE CHILI PEPPERS DATA	5
TOMATOES-WHOLE	8	2	0.00030	PDP	2
TOMATOES-JUICE	8	2	0.00001	0.03 X DILUTION FACTOR	2
TOMATOES-PUREE	8	2	0.00018	0.6 X DILUTION FACTOR	2
TOMATOES-PASTE	8	2	0.00030	PDP	2
TOMATOES-CATSUP	8	2	0.00024	0.8 X DILUTION FACTOR	2

COMMODITY	Tolerance		Chronic Anticipated Residues		% Crop Treated
	Present	Pending	AR	Sources & any processing factors	
BEETS-TOPS	8	4	0.77200	USE TURNIP DATA	100
CELERY	8	8	0.00200	PDP	12
CHICORY	8	8	8.00000	TOLERANCE	100
BROCCOLI	8	8	0.00100	PDP	6
BRUSSEL SPROUTS	8	8	0.00100	FDA & FODC	10
CABBAGE	8	8	0.00030	FDA	3
CAULIFLOWER	8	8	0.00060	FDA	6
COLLARDS	8	8	0.00050	FDA	5
CABBAGE-CHINESE	8	8	0.00030	FDA	3
KALE	8	8	0.00100	FDA	10
KOHLRABI	8	8	0.00060	USE CAULIFLOWER DATA	6
LETTUCE-LEAFY	8	8	0.00090	PDP	5
DANDELION	8	8	8.00000	TOLERANCE	100
ENDIVE	8	8	0.00100	FDA	10
FENNEL	8	8	8.00000	TOLERANCE	100
CRESS	8	8	8.00000	TOLERANCE	100
LETTUCE-UNSPEC	8	8	0.00090	PDP	5
MUSTARD GREENS	8	8	0.01000	FDA & FODC	10
PARSLEY	8	8	8.00000	TOLERANCE	100
RHUBARB	8	8	0.08000	TOLERANCE	1
SPINACH	8	8	0.00330	PDP	15
SWISS CHARD	8	8	0.00100	FDA & FODC	10
TURNIPS-TOPS	8	4	0.00100	FDA & FODC	10
WATERCRESS	8	0.2	0.05000	FIELD TRIAL	100
CRESS,UPLAND	8	8	8.00000	TOLERANCE	100
LETTUCE-HEAD	8	8	0.00090	PDP	5
BEETS-ROOTS	8	0.5	0.00100	FDA & FODC	10
CARROTS	8	1	0.00050	PDP	3
GARLIC	8	1	0.00240	USE BULB ONION DATA	24

COMMODITY	Tolerance		Chronic Anticipated Residues		% Crop Treated
	Present	Pending	AR	Sources & any processing factors	
LEEKS	8	6	0.00240	USE BULB ONION DATA	24
ONIONS-DRY-BULB	8	1	0.00240	FDA	24
ONIONS-DRIED	8	1	0.00240	FDA	24
P O T A T O (W H) - WHOLE	8	0.1	0.00008	PDP	1
POTATO(WH)-PULP	8	0.1	0.00008	PDP	1
POTATO(WH)-DRY	8	0.1	0.00008	PDP	1
POTATO(WH)-PEEL	8	0.1	0.00008	PDP	1
RADISHES-ROOTS	8	0.5	0.00050	FDA	5
RUTABAGAS-ROOTS	8	0.5	0.50000	TOLERANCE	100
SALSIFY	8	0.5	0.50000	TOLERANCE	100
SHALLOTS	8	6	0.00100	USE GREEN ONION DATA	10
SWEETPOTATOES	1	0.1	0.00800	PDP	100
TURNIPS-ROOTS	8	0.5	0.00100	FDA&FODC	10
PARSNIPS	8	0.5	0.50000	TOLERANCE	100
BEANS-DRY-GRT NO	8	2	0.00010	FDA(COMBINED ALL DRY BEANS)	1
BEANS-DRY-KIDNEY	8	2	0.00010	FDA(COMBINED ALL DRY BEANS)	1
BEANS-DRY-LIMA	8	2	0.00010	FDA(COMBINED ALL DRY BEANS)	1
BEANS-DRY-NAVY	8	2	0.00010	FDA(COMBINED ALL DRY BEANS)	1
BEANS-DRY-OTHER	8	2	0.00010	FDA(COMBINED ALL DRY BEANS)	1
BEANS-DRY-PINTO	8	2	0.00010	FDA (COMBINED ALL DRY BEANS)	1
BEANS-SUCC-LIMA	8	2	0.00050	PDP	3
BEANS-SUCC-GREEN	8	2	0.00050	PDP	3
BEANS-SUCC-OTH	8	2	0.00050	PDP	3
BEANS-SUCC-WAX	8	2	0.00050	PDP	3
CORN,POP	8	8	0.17340	USE FIELD CORN DATA	100
CORN,SWEET	2	0.1	0.00010	PDP	1
PEANUTS-WHOLE	8	0	0.00000	REVOKE TOLERANCE	-
PEAS DRY-GARDEN	8	0	0.00000	REVOKE TOLERANCE	-

COMMODITY	Tolerance		Chronic Anticipated Residues		% Crop Treated
	Present	Pending	AR	Sources & any processing factors	
PEAS SUCC-GARDEN	8	2	0.00080	PDP	2
LENTILES-WHOLE	8	0	0.00010	FDA(COMBINED ALL DRY BEANS)	1
LENTILES-SPLIT	8	0	0.00010	FDA(COMBINED ALL DRY BEANS)	1
MUNG BEANS	8	2	0.00010	FDA(COMBINED ALL DRY BEANS)	1
OKRA	8	3	0.00700	FDA & FODC	66
SUNFLOWER-SEEDS	8	0	0.00000	REVOKE TOLERANCE	-
BEANS-DRY-BROAD	8	2	0.00010	FDA (COMBINED ALL DRY BEANS)	1
BEANS-SUCC-BROAD	8	2	0.00050	PDP	3
BEANS-DRY-PIGEON	8	2	0.00010	FDA (COMBINED ALL DRY BEANS)	1
BEANS-UNSPEC	8	2	0.00010	FDA (COMBINED ALL DRY BEANS)	1
SOYBEAN-SPROUTED	8	0	0.00000	REVOKE TOLERANCE	-
BEANS-DRY-HYAC	8	2	0.00010	FDA (COMBINED ALL DRY BEANS)	1
BEANS-SUCC-HYAC	8	2	0.00050	PDP	3
BLKEYE PEAS-DRY	8	2	0.00010	FDA (COMBINED ALL DRY BEANS)	1
BEANS-DRY	8	2	0.00010	FDA (COMBINED ALL DRY BEANS)	1
ASPARAGUS	8	2	0.00020	FDA	2
MUSHROOMS	8	0.2	0.01000	FDA & FODC	100
ONIONS-GREEN	8	6	0.00100	FDA	10
BARLEY	8	8	0.06500	USE WHEAT DATA	100
CORN,GRAIN-ENDO	8	8	0.17340	FDA	100
CORN,GRAIN-BRAN	8	8	0.17340	FDA	100
CORN SUGAR	8	8	0.17340	FDA	100
OATS	8	8	0.05640	FDA	100
RICE-ROUGH	8	30	0.05530	FDA	100
RICE-MILLED	8	30	0.00110	0.02 X DILUTION FACTOR	100
RYE-ROUGH	8	8	0.06500	USE WHEAT DATA	100
RYE-GERM	8	8	0.06500	USE WHEAT DATA	100
RYE-FLOUR	8	8	0.06500	USE WHEAT DATA	100
SORGHUM	8	8	0.17340	USE FIELD CORN DATA	100

COMMODITY	Tolerance		Chronic Anticipated Residues		% Crop Treated
	Present	Pending	AR	Sources & any processing factors	
WHEAT-ROUGH	8	8	0.06500	PDP	100
WHEAT-GERM	8	8	0.06500	PDP	100
WHEAT-BRAN	8	8	0.06500	PDP	100
WHEAT-FLOUR	8	8	0.06310	FDA	100
BEET SUGAR	1	0	0.00000	REVOKE TOLERANCE	-
CORN,GRAIN-OIL	8	8	0.00173	0.01X DILUTION FACTOR	100
COTTONSEED-OIL	2	20	0.00120	0.007 * AVG FIELD TRIAL RESIDUE	5
COTTONSEED-MEAL	2	20	0.01200	0.07 * AVG FIELD TRIAL RESIDUE	5
FLAX SEED	0.1	0.1	0.00100	TOLERANCE	1
PEANUTS-OIL	8	0	0.00000	REVOKE TOLERANCE	-
SAFFLOWER-SEED	0.2	0	0.00000	REVOKE TOLERANCE	-
SAFFLOWER-OIL	0.6	0	0.00000	REVOKE TOLERANCE	-
SOYBEANS-OIL	8	0	0.00000	REVOKE TOLERANCE	-
SUNFLOWER-OIL	8	0	0.00000	REVOKE TOLERANCE	-
SOYBEANS-DRY	8	0	0.00000	REVOKE TOLERANCE	-
SOY-FL	8	0	0.00000	REVOKE TOLERANCE	-
PEPPERMINT	8	2	0.00938	FIELD TRIAL AVERAGE	1
PEPPERMINT-OIL	8	15	0.11910	12.7 X CONCENTRATION FACTOR	1
SPEARMINT	8	2	0.00938	FIELD TRIAL AVERAGE	1
SPEARMINT-OIL	8	15	0.11910	12.7 X CONCENTRATION FACTOR	1
MILK-FAT SOLIDS	0.5	0	0.00000	REVOKE TOLERANCE	-
BEEF -ALL	4	0	0.00000	REVOKE TOLERANCE	-
GOAT-ALL	4	0	0.00000	REVOKE TOLERANCE	-
HORSE-ALL	4	0	0.00000	REVOKE TOLERANCE	-
SHEEP-ALL	4	0	0.00000	REVOKE TOLERANCE	-
PORK-ALL	4	0	0.00000	REVOKE TOLERANCE	-
POULTRY-ALL	4	0	0.00000	REVOKE TOLERANCE	-
EGGS-WHOLE	0.1	0	0.00000	REVOKE TOLERANCE	-
EGGS-WHITE ONLY	0.1	0	0.00000	REVOKE TOLERANCE	-

COMMODITY	Tolerance		Chronic Anticipated Residues		% Crop Treated
	Present	Pending	AR	Sources & any processing factors	
EGGS-YOLK ONLY	0.1	0	0.00000	REVOKE TOLERANCE	-

Table 2. Summary of Pesticide Residue Monitoring Data Considered in Estimation of Anticipated Residues of Malathion in the Diet.

Commodity	Data Source	Samples	Number of Detects	Percent Detects	Limit of Quantitation	% Crop Treated	Maximum Residue	Avg. Res. (AR)	95th %tile
CANEBERRIES BLACKBERRY BOYSENBERY DEWBERRY LOGANBERRY RASPBERRY	FDA 92-96	158	19	12	0.02	55	0.204	0.0089	0.02
BLUEBERRIES	FDA 92-96	176	10	5.7	0.02	80	0.08	0.0093	T
CRANBERRIES*	FDA 92-96	69	1	1.4	0.02	7	0.02	0.0008	ND
	FODC 92-96	111	0	0.0	0.02	7	ND		ND
GRAPES	PDP 95-96	1215	0	0.0	0.023	1	ND	0.0001	ND
STRAWBERRIES	FDA 92-96	644	78	12.1	0.02	28	0.28	0.0133	0.08
GRAPEFRUIT	FDA 92-96	133	0	0.0	0.02	1	ND	0.0001	ND
LEMON	FDA 92-96	118	2	1.7	0.02	2	0.08	0.0012	ND
ORANGE	PDP 95-96	1209	6	0.5	0.037	1	0.028	0.0002	ND
ORANGE JUICE*	PDP 97	604	0	0.0	0.02	1	ND	0.0001	ND
APPLE	PDP 95-96	1723	0	0.0	0.037	15	ND	0.003	ND

Commodity	Data Source	Samples	Number of Detects	Percent Detects	Limit of Quantitation	% Crop Treated	Maximum Residue	Avg. Res. (AR)	95th %tile
APPLE JUICE*	PDP 96	177	1	0.6	0.023	15	<0.017	0.002	ND
PEAR	PDP 97	635	0	0.0	0.02	2	ND	0.0002	ND
APRICOT	FDA 92-96	141	2	1.4	0.02	1	0.04	0.0005	ND
CHERRY	FDA 92-96	348	84	24.1	0.02	45	0.23	0.0120	0.053
NECTARINE	FDA 92-96	179	1	0.6	0.02	5	0.05	0.0008	ND
PEACH	PDP 95-96	691	2	0.3	0.040	5	0.005	0.001	ND
PLUM*	FDA 92-96	99	0	0.0	0.02	1	ND	0.0001	ND
AVOCADO	FDA 92-96	19	0	0.0	0.02	100	ND	0.01	ND
	FODC 92-96	367	0	0.0	0.02	100	ND		ND
MANGOES	FDA 92-96 IMP & DOM	395 (18 DOM)	6 (ALL FROM MEX)	1.5	0.02	100	0.02	0.01	ND
PINEAPPLE	FDA 92-96 DOM & IMP	529 (33 DOM & 499 IMP)	1 (MEX)	0.2	0.02	100	TRACE	0.01	ND
PINEAPPLE*	FODC 92-96	50	0	0.0			ND		ND
CANTALOUPE	FDA 92-96	324	8	2.5	0.02	11	0.40	0.0057	ND

Commodity	Data Source	Samples	Number of Detects	Percent Detects	Limit of Quantitation	% Crop Treated	Maximum Residue	Avg. Res. (AR)	95th %tile
HONEYDEW	FDA 92-96	68	0	0.0	0.02	8	ND	0.0008	ND
	FODC 92-96	103	0	0.0		8	ND		ND
WATERMELON	FDA 92-96	343	0	0.0	0.02	5	ND	0.0005	ND
CUCUMBERS	FDA 92-96	341	0	0.0	0.02	3	ND	0.0003	ND
SQUASH	FDA 92-96	347	0	0.0	0.02	9	ND	0.0009	ND
WINTER SQUASH	PDP 97	587	0	0.0	0.02	9	ND	0.0009	ND
EGG PLANT	FDA 92-96	127	1	0.8	0.02	11	0.07	0.0016	ND
SWEET PEPPER	FDA 92-96	282	0	0.0	0.02	4	ND	0.0004	ND
HOT PEPPER	FDA 92-96	73	0	0.0	0.02	5	ND	0.0057	ND
	FODC 92-96	267	7	2.6		5	.920		ND
TOMATOES	PDP 96	174	0	0.0	0.030	2	ND	0.0003	ND
BEET TOPS*	FDA	7	0	0.0			ND		ND
	FODC	64	0	0.0			ND		ND
CELERY	PDP 93-94	810	7	0.9	0.033	12	0.084	0.002	ND

Commodity	Data Source	Samples	Number of Detects	Percent Detects	Limit of Quantitation	% Crop Treated	Maximum Residue	Avg. Res. (AR)	95th %tile
BROCCOLI	**PDP 93-94**	**1319**	**0**	**0.0**	**0.033**	**6**	**ND**	**0.001**	**ND**
BRUSSELS SPROUTS	**FDA 92-96**	**12**	**0**	**0.0**		**10**	**ND**	**0.001**	**ND**
	FODC 92-96	**161**	**0**	**0.0**	**0.02**	**10**	**ND**		**ND**
CABBAGE	**FDA 92-96**	**405**	**0**	**0.0**	**0.02**	**3**	**ND**	**0.0003**	**ND**
CAULIFLOWER	**FDA 92-96**	**235**	**0**	**0.0**	**0.02**	**6**	**ND**	**0.0006**	**ND**
COLLARDS	**FDA 92-96**	**129**	**2**	**1.6**	**0.02**	**5**	**TRACE**	**0.0005**	**ND**
CHINESE CABBAGE, CELERY	**FDA 92-96**	**104**	**0**	**0.0**	**0.02**	**3**	**ND**	**0.0003**	**ND**
KALE	**FDA 92-96**	**105**	**1**	**1.0**	**0.02**	**10**	**TRACE**	**0.0010**	**ND**
LETTUCE	**PDP 93-94**	**1338**	**3**	**0.2**	**0.033**	**5**	**0.047**	**0.0009**	**ND**
ENDIVE, ESCAROLE	**FDA 92-96**	**131**	**0**	**0.0**	**0.02**	**10**	**ND**	**0.0010**	**ND**
MUSTARD GREENS	**FODC 92-96**	**95**	**0**	**0.0**	**0.02**	**10**	**ND**	**0.0010**	**ND**
	FDA 92-96	**73**	**0**	**0.0**	**0.02**	**10**	**ND**		**ND**
SPINACH	**PDP 95-96**	**1127**	**5**	**0.4**	**0.043**	**15**	**0.028**	**0.0033**	**ND**

Commodity	Data Source	Samples	Number of Detects	Percent Detects	Limit of Quantitation	% Crop Treated	Maximum Residue	Avg. Res. (AR)	95th %tile
SWISS CHARD	FDA 92-96	12	0	0.0	0.02	10	ND	0.001	ND
	FODC 92-96	89	0	0.0	0.02	10	ND		ND
TURNIP GREENS	FDA 92-96	56	0	0.0	0.02	10	ND	0.001	ND
	FODC 92-96	74	0	0.0	0.02	10	ND		ND
RED BEET	FDA 92-96	91	0	0.0	0.02	10	ND	0.001	ND
	FODC 92-96	105	0	0.0	0.02	10	ND		ND
CARROT	PDP 95-96	1178	1	0.1	0.033	3	<0.017	0.0005	ND
BULB ONIONS	FDA 92-96	204	1	0.5	0.02	24	0.01	0.0024	ND
POTATO	PDP 95	707	0	0.0	0.017	1	ND	0.00008	ND
RADISH	FDA 92-96	106	0	0.0	0.02	5	ND	0.0005	ND
RUTABAGA*	FDA 92-96	13	0	0.0	0.02		ND		ND
	FODC 92-96	62	0	0.0			ND		ND
SWEET POTATO	PDP 96	507	8	1.6	0.017	100	0.012	0.008	ND

Commodity	Data Source	Samples	Number of Detects	Percent Detects	Limit of Quantitation	% Crop Treated	Maximum Residue	Avg. Res. (AR)	95th %tile
TURNIP ROOTS	FDA 92-96	35	0	0.0	0.02		ND		ND
	FODC 92-96	96	0	0.0	0.02	10	ND	0.001	ND
DRY BEANS	FDA 92-96	162	1	0.6	0.02	1	TRACE	0.0001	ND
GREEN BEANS	PDP 95-96	1118	0	0.0	0.033	3	ND	0.0005	ND
SWEET CORN	PDP 95-96	844	0	0.0	0.02	1	ND	0.0001	ND
PEANUT*	FDA 92-96	75	5	6.7	0.02	1	0.277	0.0017	ND
	FODC 92-96	184	0	0.0		1	ND		ND
SWEET PEAS	PDP 95-96	1021	0	0.0	0.023	7	ND	0.0008	ND
OKRA	FDA 92-96	41	1	2.4	0.02	66	0.06	0.0070	ND
	FODC 92-96	80	0	0.0			ND		ND
ASPARAGUS	FDA 92-96	134	0	0.0	0.02	2	ND	0.0002	ND
MUSHROOM	FDA 92-96	77	0	0.0	0.02	100	ND	0.01	ND
	FODC 92-96	268	0	0.0		100	ND		ND

Commodity	Data Source	Samples	Number of Detects	Percent Detects	Limit of Quantitation	% Crop Treated	Maximum Residue	Avg. Res. (AR)	95th %tile
GREEN ONIONS	**FDA 92-96**	**101**	**0**	**0.0**	**0.02**	**10**	**ND**	**0.0010**	**ND**
WHOLE GRAIN CORN	**FDA 92-96**	**100**	**38**	**38.0**	**0.02**	**100**	**7.96**	**0.1734**	**0.44**
WHOLE GRAIN OATS	**FDA 92-96**	**119**	**41**	**34.5**	**0.02**	**100**	**0.92**	**0.0564**	**0.468**
WHOLE GRAIN RICE	**FDA 92-96**	**170**	**18**	**10.6**	**0.02**	**100**	**4.49**	**0.0553**	**0.08**
WHOLE GRAIN WHEAT	**PDP 95-96**	**940**	**275**	**29.3**	**0.01**	**100**	**2.874**	**0.065**	**0.305**
WHEAT FLOUR	**FDA 92-96**	**113**	**79**	**69.9**	**0.02**	**100**	**1.056**	**0.0631**	**0.247**
MILK*	**PDP 96**	**558**	**0**	**0.0**	**0.0033**	**-**	**ND**	**0.0017**	**ND**
EGGS*	**FDA 92-96**	**494**	**0**	**0.0**	**0.02**	**-**	**ND**	**0.010**	**ND**
CATTLE LIVER*	**FSIS 85-86**	**1696**	**0**	**0.0**	**0.04**	**-**	**ND**	**0.02**	**ND**

Table 3. Processing Data Considered in Estimation of Anticipated Residues of Malathion in the Diet

FOOD	PROCESSED FORM	CONCENTRATION FACTOR	SOURCE OF DATA
Grapes	Juice	0.1X	MRID 43548401
	Raisins	0.4X	MRID 43548401
Citrus Fruits	Juice	0.06X	MRID 43451701
Apples	Juice	0.13X	MRID 44009601
Tomatoes	Juice	0.03X	MRID 43499901
	Puree	0.6X	MRID 43499901
	Catsup	0.8X	MRID 43499901
Rice	Milled	0.02X	MRID 43562301
Corn	Oil	0.01X	MRID 43451701
Cottonseed	Oil	0.007X	MRID 43585301
	Meal	0.07X	MRID 43585301
Mint	Oil	12.7X	MRID 44124801

Table 4. Crop Field Trial Data Considered in Estimation of Anticipated Residues of Malathion in the Diet.

Crop	Average Residue	Maximum Residue	Source of Data
Macadamia Nuts	0.05	0.1	MRID 44076801
Chestnuts	0.261	0.632	MRID 44478401
Walnuts	0.05	0.10	MRID 44383301
Figs	0.203	0.387	MRID 44061201
Guava	0.159	0.48	MRID 44391501
Passion Fruit	0.0564	0.121	MRID 44472801
Papayas	0.125	0.61	MRID 44331001
Melon	0.127	0.826	MRID 44098401
Turnip root	0.067	0.155	MRID 44266401
Turnip tops	0.772	1.83	MRID 44266401
Watercress	0.05	0.1	MRID 44094801
Cottonseed	3.429	19.12	MRID 43596601
Peppermint & Spearmint	0.938	1.41	MRID 44124801

cc: WSmith (CEB1), Malathion Reg. Std. File, Malathion SF, RF.
7509C:CEB1:WSmith:Rm 810C:CM2: 703-305-5353: 5/10/99.